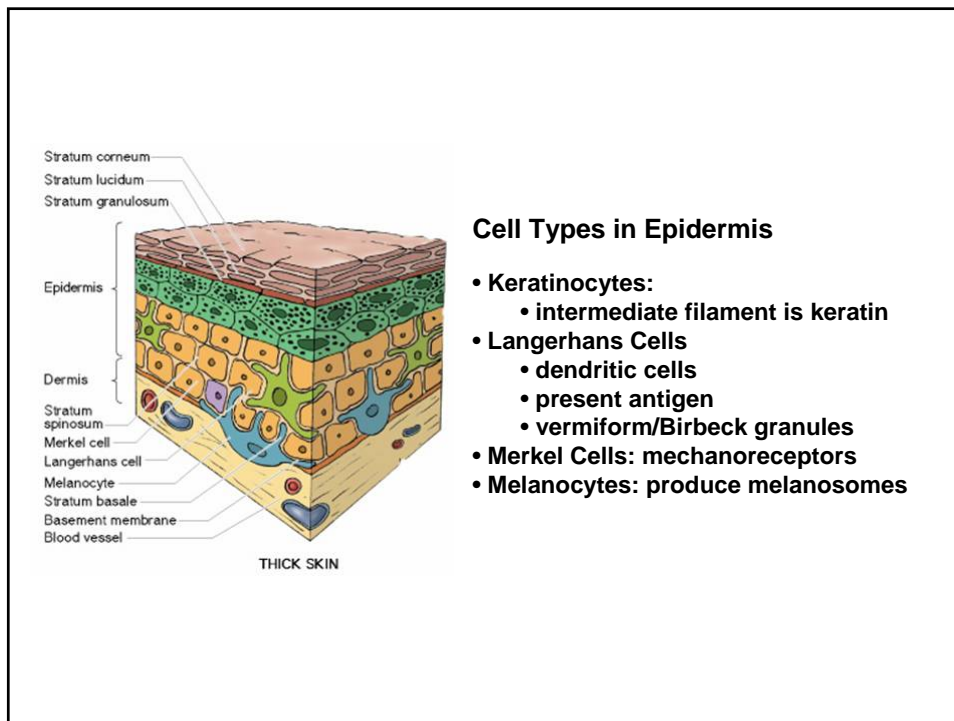
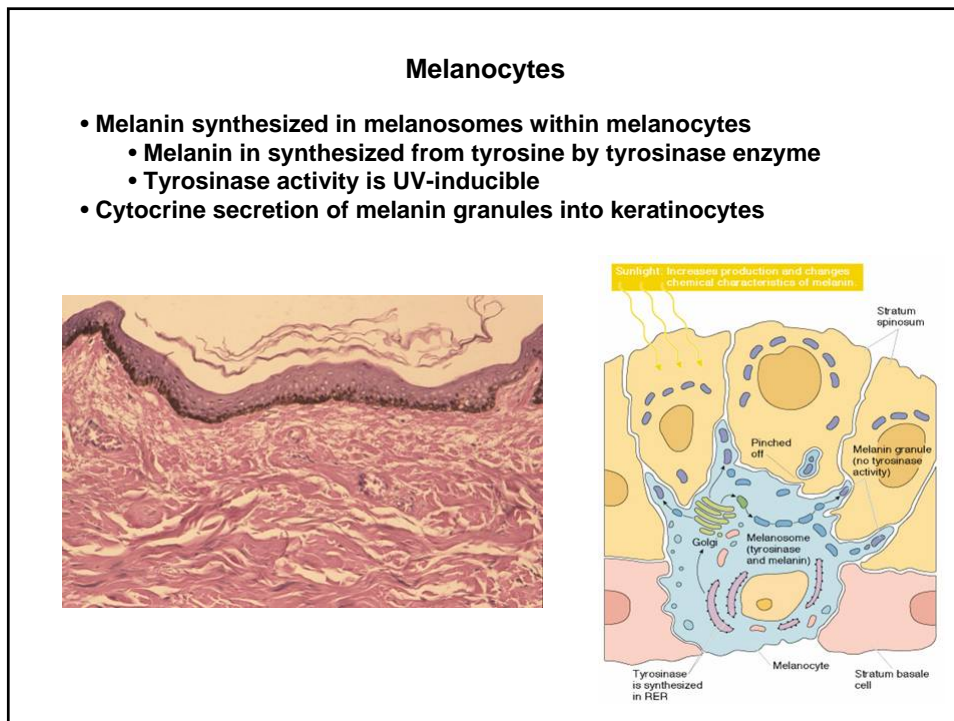
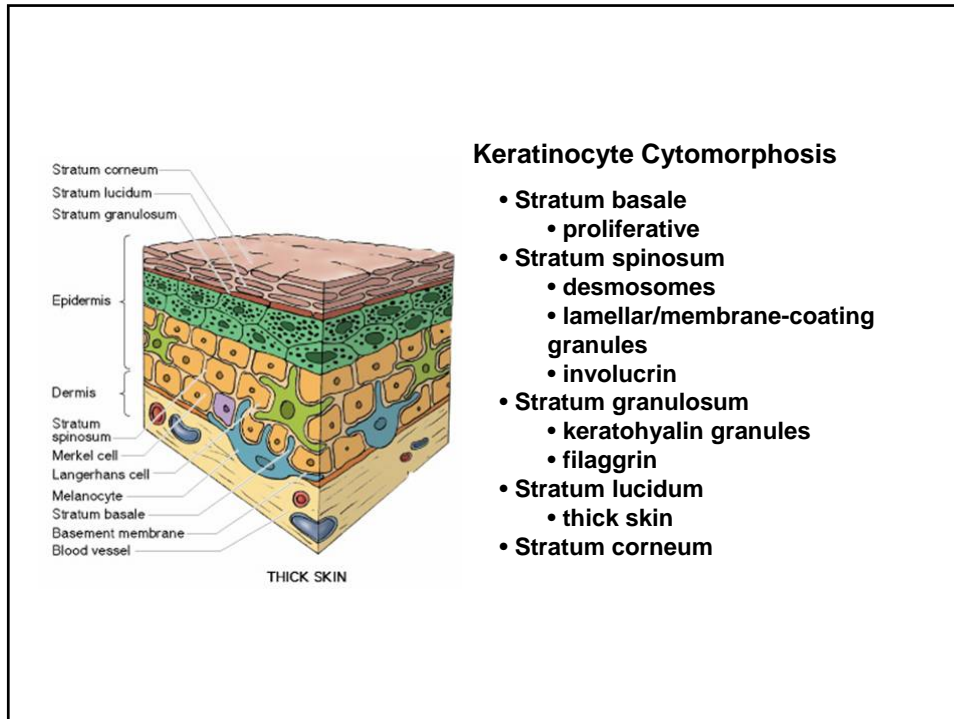


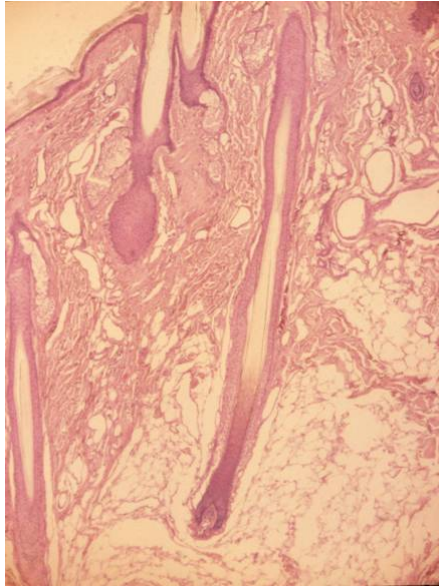
- **Epidermis**
  - Stratified, squamous keratinized epithelium
  - Appendages
    - hair follicles
    - nails
    - sweat glands
    - sebaceous glands
    - mammary glands
- **Dermis**
  - Dense, irregular connective tissue
- **Hypodermis**
  - Superficial fascia



**Cell Types in Epidermis**

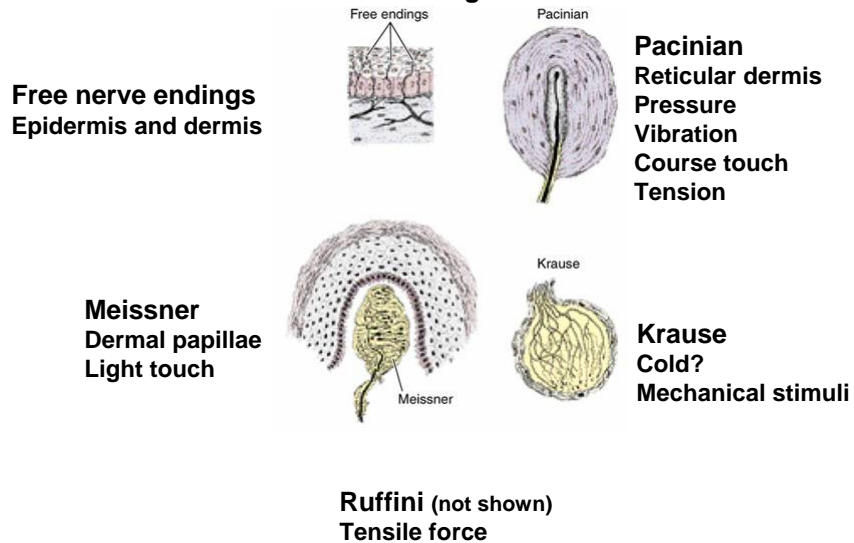
- **Keratinocytes:**
  - intermediate filament is keratin
- **Langerhans Cells**
  - dendritic cells
  - present antigen
  - vermiform/Birbeck granules
- **Merkel Cells:** mechanoreceptors
- **Melanocytes:** produce melanosomes

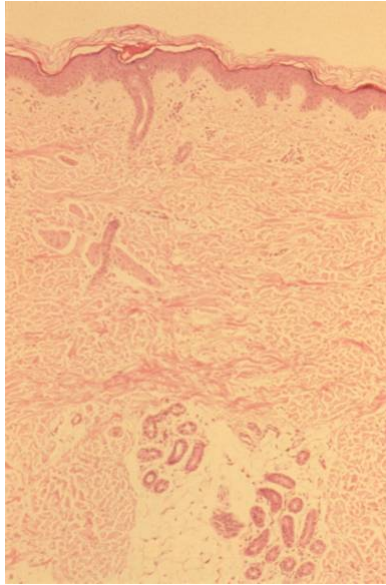




- **Papillary dermis: numerous cells**
  - **Fibroblasts**
    - loose collagen
    - type III: reticular fibers
    - type VII: anchoring fibrils
    - fine elastic fibers
  - **Capillaries and arteriovenous anastomoses**
  - **Immune system cells**
  - **Mechanoreceptors**
    - Free nerve endings
    - Meissner's corpuscles
    - Krause's corpuscles
- **Reticular dermis: fewer cells**
  - **Fibroblasts**
    - type I collagen
    - thick elastic fibers
  - **Sweat glands**
  - **Hair follicles**
  - **Arrector pili muscles**
  - **Sebaceous gland**
  - **Mechanoreceptors**
    - Pacinian corpuscles
    - Ruffini corpuscles

### Sensory Mechanoreceptors in the Integument

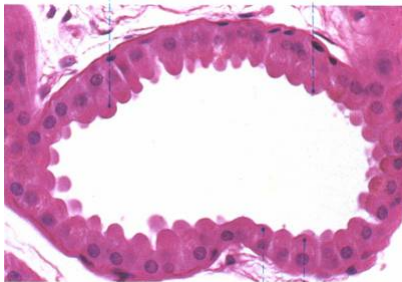




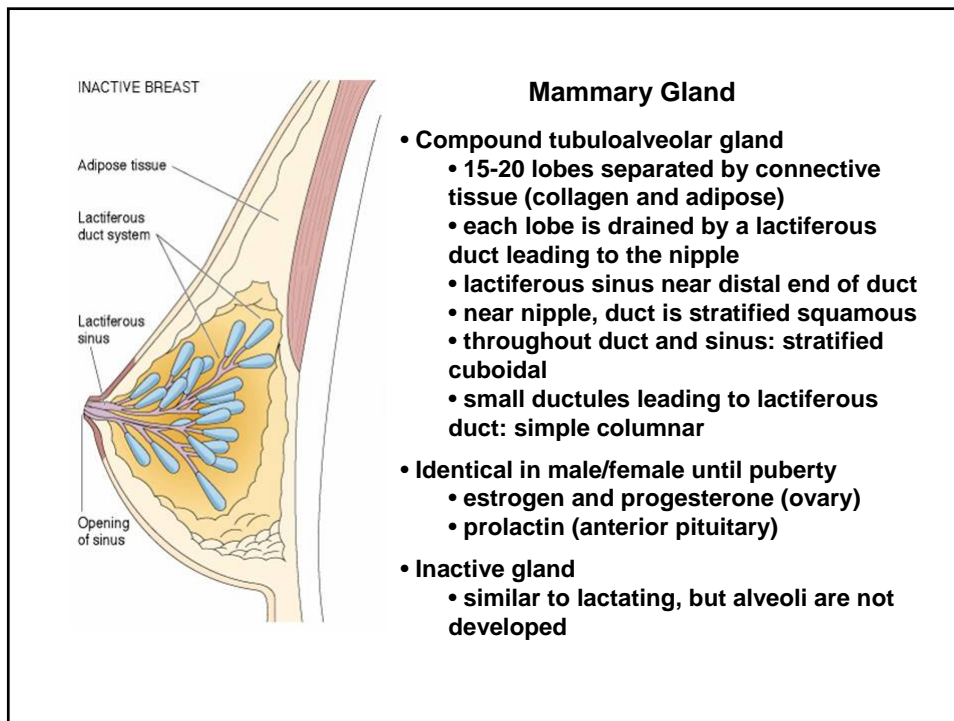
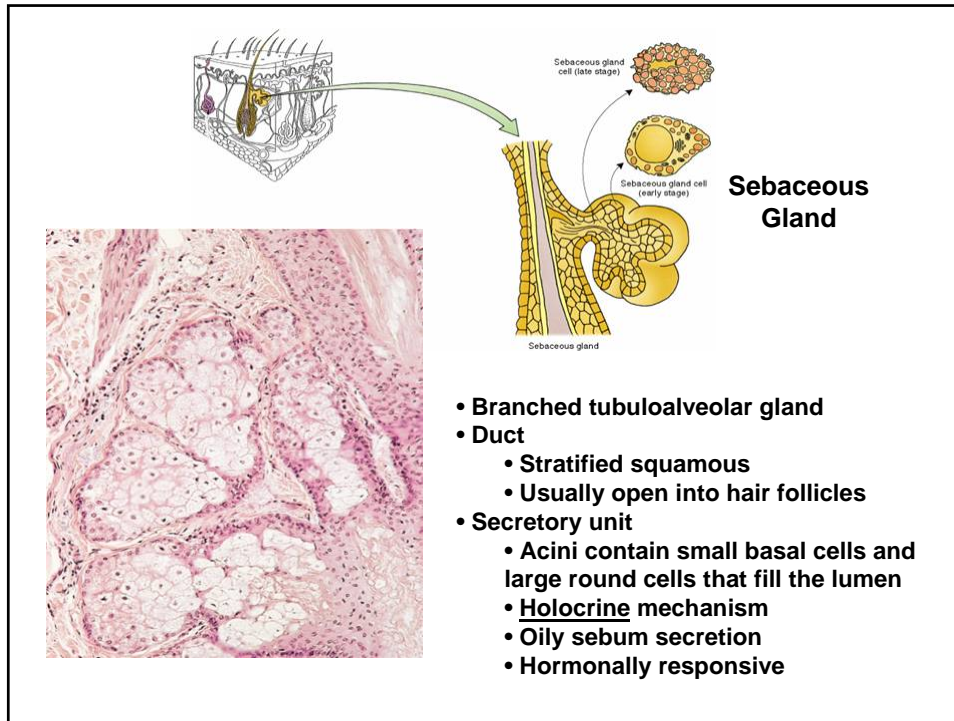
### Eccrine Sweat Gland

- Simple coiled tubular gland
- Sympathetic, cholinergic innervation
- Duct
  - Stratified cuboidal
  - Opens on surface of epidermis
  - Resorbs potassium, sodium and chloride ions
  - Excretes urea and lactic acid
- Secretory unit
  - Mixed cuboidal, columnar, and pseudostratified
  - Merocrine mechanism
  - Dark cells
  - Clear cells
  - Contractile myoepithelial cells

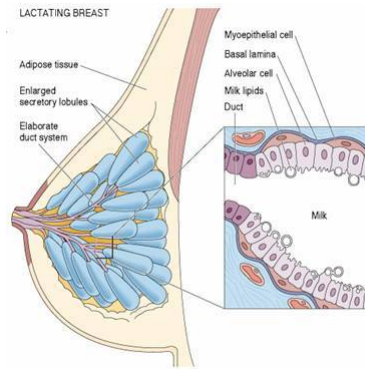
### Apocrine Sweat Gland



- Simple or branched coiled tubular gland
- Sympathetic, adrenergic innervation
- Duct
  - Stratified cuboidal
  - Opens into hair follicle
- Secretory unit
  - Large lumen stores secretion
  - Cuboidal or columnar
  - Merocrine mechanism
  - Odorless viscous secretion
  - Hormonally responsive, begin to function at puberty
  - Contractile myoepithelial cells
- Restricted distribution: axilla, anus, areola, auditory canal, eyelids



## Lactating Mammary Gland



- **During pregnancy**
  - Elevated progesterone and estrogen (ovary and placenta)
  - Ducts grow and branch
  - Alveoli develop and mature
    - cuboidal cells
    - myoepithelial cells
  - Colostrum accumulates
    - will be ejected day 1-3
    - contains lymphocytes, monocytes, antibodies, lactalbumin, minerals, electrolytes
- **Prolactin surge (anterior pituitary)**
  - Stimulates milk production
    - day 4-continuous
  - Contains proteins, lipids, antibodies, lactose, vitamins, minerals, electrolytes
- **Oxytocin (posterior pituitary)**
  - Stimulates milk ejection or “let down”